

What is claimed is:

- 1 1. An optical recording medium for recording and  
2 retrieving information with an optical beam comprising:  
3 a substrate;  
4 a transparent layer disposed on the substrate; and  
5 a reflecting layer optically reactive with the  
6 transparent layer disposed on the transparent layer.
- 1 2. The optical recording medium of claim 1, further  
2 including a semi-transparent reflective area formed near  
3 the interface of transparent layer and reflecting layer  
4 after the optical recording medium is exposed to the  
5 optical beam.
- 1 3. The optical recording medium of claim 2, wherein the  
2 semi-transparent reflective area is an alloy/compound of  
3 the transparent layer and the reflective layer.
- 1 4. The optical recording medium of claim 2, wherein the  
2 semi-transparent reflective area distorts optical constants  
3 ( $n$  &  $k$ ) and thereby alters the overall reflective intensity.
- 1 5. The optical recording medium of claim 2, wherein the  
2 semi-transparent reflective area reduces the effective  
3 thickness of the transparent layer and changes the optical-  
4 path of the incident and reflected light from the optical  
5 beam, thereby shifting constructive or destructive  
6 interference and altering the reflective intensity.
- 1 6. The optical recording medium of claim 2, wherein the  
2 semi-transparent reflective area transforms the

3 polarization angle and thereby alters the reflective  
4 intensity.

1 7. The optical recording medium of claim 1, wherein the  
2 transparent layer has a thickness ranging from 5 to 500 nm.

1 8. The optical recording medium of claim 1, wherein the  
2 transparent layer comprises of a material selected from the  
3 group consisting of Si, Ge, GaP, InP, GaAs, InAs, GaSb,  
4 InSb, In-Sn oxide, tin oxide, indium oxide, zinc oxide,  
5 titanium oxide, Sb-Sn oxide, or combinations thereof.

1 9. The optical recording medium of claim 1, wherein the  
2 reflecting layer has a thickness ranging from 1 to 500 nm.

1 10. The optical recording medium of claim 1, wherein the  
2 reflecting layer comprises a material selected from the  
3 group consisting of Ag, Al, Au, Pt, Cu, In, Sn, W, Ir, Re,  
4 Rh, Ta, and their alloys, or combinations thereof.

1 11. The optical recording medium of claim 1, further  
2 comprising a thermal-manipulating layer between the  
3 substrate and the transparent layer.

1 12. The optical recording medium of claim 1, further  
2 comprising a protective layer disposed on the reflecting  
3 layer.

1 13. The optical recording medium of claim 12, further  
2 comprising a thermal-manipulating layer between the  
3 reflecting layer and the protective layer.

1 14. The optical recording medium of claim 2, wherein the  
2 semi-transparent reflective area is more reflective than  
3 the reflecting layer.

1 15. The optical recording medium of claim 2, wherein the  
2 semi-transparent reflective area is less reflective than  
3 the reflecting layer.

1 16. A method of optically recording information on an  
2 optical recording medium comprising a substrate, a  
3 transparent layer disposed on the substrate, and a  
4 reflecting layer optically reactive with the transparent  
5 layer disposed on the transparent layer, which comprises  
6 irradiating the transparent layer and reflecting layer with  
7 an optical beam to form a semi-transparent reflective area  
8 therebetween.

1 17. The method as claimed in claim 16, wherein the semi-  
2 transparent reflective area is an alloy/compound of the  
3 transparent layer and the reflective layer.

1 18. The method as claimed in claim 16, wherein the semi-  
2 transparent reflective area distorts optical constants ( $n$  &  
3  $k$ ) and thereby alters the overall reflective intensity.

1 19. The method as claimed in claim 16, wherein the semi-  
2 transparent reflective area reduces the effective thickness  
3 of the transparent layer and changes the optical-path of  
4 the incident and reflected light from the optical beam,  
5 thereby shifting constructive or destructive interference  
6 and altering the reflective intensity.

1 20. The method as claimed in claim 16, wherein the semi-  
2 transparent reflective area transforms the polarization  
3 angle and thereby alters the reflective intensity.

1 21. The method as claimed in claim 16, wherein the  
2 transparent layer has a thickness ranging from 5 to 500 nm.

1 22. The method as claimed in claim 16, wherein the  
2 transparent layer comprises of a material selected from the  
3 group consisting of Si, Ge, GaP, InP, GaAs, InAs, GaSb,  
4 InSb, In-Sn oxide, tin oxide, indium oxide, zinc oxide,  
5 titanium oxide, Sb-Sn oxide, or combinations thereof.

1 23. The method as claimed in claim 16, wherein the  
2 reflecting layer has a thickness ranging from 1 to 500 nm.

1 24. The method as claimed in claim 16, wherein the  
2 reflecting layer comprises a material selected from the  
3 group consisting of Ag, Al, Au, Pt, Cu, In, Sn, W, Ir, Re,  
4 Rh, Ta, and their alloys, or combinations thereof.

1 25. The method as claimed in claim 16, wherein the semi-  
2 transparent reflective area is more reflective than the  
3 reflecting layer.

1 26. The method as claimed in claim 16, wherein the semi-  
2 transparent reflective area is less reflective than the  
3 reflecting layer.